**Name: Sean Coleman Date:**

**Task 1 - Energy auditing a computer system & recommend how sustainability can be integrated into an upgrade**

Instruction

• Gather information to prepare the installation of an energy measuring device on a computer system

• Prepare for the installation of the device

• Configure and test the device

• Complete and document installation and test results

• Evaluate opportunities to integrate sustainable ICT projects and reduce energy consumption

**Project Resources**

Current Cost EnviR Energy Monitor

Warning: Installation is simple yet if you are in Australia, for liability reasons it is required to be carried out by a qualified electrician when in in a power switchboard.

* <http://www.smartnow.com.au/installinstructions.php>
* <http://www.smartnow.com.au/current_cost_bridge.php>

**Theory**

Complete the following notes:

1. Q: Does the Current Cost EnviR Energy Monitor comply with Electrical Safety Standards?

ANSWER: Yes it does comply with the Electrical Safety Standards.

1. Advise how you prepared the installation of Current Cost EnviR Energy Monitor

ANSWER:

1. connect the CT Clamp to the selected power source to monitor
2. connect the CT clamp to the ENViR transmitter,
3. connect power source for the transmitter
4. connect power source for the display unit
5. activate and monitor
6. Advise how you configured and tested the Current Cost EnviR Energy Monitor

ANSWER: we connected it to the exposed red wire of the power source we wished to monitor, then after powering up we cycled through the available options until we found the required readouts we where after. This was done whilst testing computer equipement through the power line. Once we recorded our readings we tested the same equipment using another power monitoring device and also recorded those readings. Once completed we compared the two results to see any differences.

* Connect the clamp to the live wire and connect transmitter unit.
* Turn on the transmitter unit.
* Connect the transmitter unit to PC to download the data.
* Analyse the result with the computer to generate the repor

1. Advise how you could document the installation and energy audit

(see <http://my.currentcost.com/>)

ANSWER: To document the installation I would take photos of each stage during the installation, also I would write up a step by step guide on the steps taken for each stage and attaching the images. This document would then be saved in an easily accessible and central space for convienience and also future reference.

In terms of documenting the energy audit I would connect the EnviR to the online service shown above. By utilizing this tool it would allow myself or a client to monitor the energy consumption real time and also perform energy audit reports for selected periods of time of either high energy usage or low energy usuage. This ability allows the customer clarity in terms of energy usuage and the ability to compare to power companies bills to ensure that both equipment and charging are accurate.

Record the electrical power consumption while doing the test conditions as below.

* PC
* Server
* WebClient
* ThinClient

**Practicum**

* **Identify power consumption of a computer system under different operating conditions using the Current Cost EnviR Energy Monitor and appropriate power lead or similar energy meter.**
* **Recommendations on upgrading computer system.**

1. Record power consumption and notes e.g. range, variability, operating conditions:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Condition** | **Power consumption**  **(watts)** | **Notes** | | | |
|  | **PC** | ThinClient  Y100 | WebClient | Server Blackbox |  |
| **OFF** | 17 | 0.3 | 0.27 | 19 |  |
| **MAX BOOT** | 51 | 3.5 | 5.1 | 42 |  |
| **IDLE** | 42 | 3.2 | 3.4 | 42 |  |
| **Wordprocessing** | 36 | 3.3 | 5.1 | 44 |  |
| **Spreadsheets** | 36 | 3.3 | 5.1 | 44 |  |
| **Web browsing**  <http://news.bbc.co.uk/2/hi/programmes/click_online/default.stm> | 45 | No reading | 4.6 | No reading |  |
| **Low level music**  [http://grooveshark.com/#/s/Fall+At+Your+Feet/3KIZB0?src=5](#/s/Fall+At+Your+Feet/3KIZB0?src=5) | 44 | No reading | 6.7 | No reading |  |
| **Low level video**  [http://www.joost.com/39w1yk49/#/?video\_info=33p1yw1t](#/?video_info=33p1yw1t) | 57 | No reading | 5.2 | No reading |  |

1. Evaluate the extent to which sustainability could be integrated into an upgrade of the computer system. Advise your recommendations:

When upgrading a computer system several requirements need to be considered, a majority of the time one of these requirements are not considered and this is sustainability. Incorporating sustainability into a computer upgrade does not require anymore thought than those of computing requirements. There are many different ways to incorporate sustainability into a computer upgrade, one that is more often used is virtualisation. This is moving away from your standard desktop environment to a virtual computer that is run and housed on the server. This leads to many benefits within the workplace, such as reduced power consumption, reduced servicing costs for your hardware fleet, reduced costs when upgrading your system. Other options include thin clients and energy efficient hardware and also cloud computing.

They key initiative here is to reduce your operating costs for both hardware and energy usage. Sustainability offers great savings in both arenas and in the long run can financially save your company a substantial amount of money. But its also not about just saving your company money, sustainability also incorporates reducing your carbon foot print and reducing the use of harmful and toxic chemicals and plastics in the world.

Alot of people and companies in the world still dont fully understand the benefits of sustainability and how they can implement them into their computer upgrades. For example if we take a room of 20 computers within a small business. Lets say this business is looking to upgrade its hardware fleet. Firstly we would evaluate what tasks' the employees of this company undertake so we can understand what their computing requirements are. 17 of the employees do basic data entry and only 3 of these do complex computing. From this we can suggest to this small company that for the 17 employees doing simple computing we recommend thin clients and for the 3 complex users we recommend a desktop pc capable of their requirements. Now at this point you might wonder what is the difference. Well for the 17 users with thin clients this means that their power consumption has been significantly lowered due to their devices. This is a massive power saving for the company, but also it means that they have purchased a lot less hazardous plastics and equipment with toxic chemicals in them. As when these thin clients are replaced they will be a much smaller carbon foot print and waste foot print then say 17 large desktops. All 17 users can still complete their day to day job with no hassles. The 3 large complex computing users can also carry on using their computers.